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Gulf Region

Proceedings of the regional peer review meeting of the assessment of the status of the southern Gulf of St. Lawrence snow crab (*Chionoecetes opilio*) stock

January 27 and 28, 2015
Moncton, NB

Chairperson: Marc Lanteigne
Editor: Venitia Joseph

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Canada

Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings may include research recommendations, uncertainties, and the rationale for decisions made during the meeting. Proceedings may also document when data, analyses or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. As such, interpretations and opinions presented in this report individually may be factually incorrect or misleading, but are included to record as faithfully as possible what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available in the timeframe of the meeting. In the rare case when there are formal dissenting views, these are also archived as Annexes to the Proceedings.

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SUMMARY

A regional advisory process meeting was held January 27 and 28, 2015 in Moncton (NB) to conduct a science peer review of the status of the snow crab (*Chionoecetes opilio*) biological unit of the southern Gulf of St. Lawrence (sGSL). The science review was conducted in response to a request from DFO Fisheries and Aquaculture Management (FAM) for advice on the status of stock in 2014 and catch advice for the 2015 fishery. The assessment on the status of the southern Gulf snow crab resource (Areas 12, 19, 12E and 12F) is based on fishery independent trawl surveys that provide indicators of abundance (commercial biomass), reproductive potential (abundance of mature females) and recruitment. Participants at the science review included science staff from the DFO Gulf Region, personnel from DFO FAM Gulf and Quebec regions, from universities, from aboriginal communities, from the fishing industry, from provincial governments, and invited external experts. A review of the stock status and the catch advice for the 2015 fishery is presented in a Science Advisory Report. Four research documents are expected in support of the advisory report.

SOMMAIRE

Une réunion régionale scientifique a été tenue les 27 et 28 janvier 2015 à Moncton (NB) afin d'entreprendre un examen scientifique par les pairs sur l'état de la population de crabe des neiges (*Chionocetes opilio*) dans l'unité biologique du sud du golfe du Saint-Laurent (sGSL). L'examen des sciences a été mené en réponse à une demande de la Gestion des pêches et de l'aquaculture (GPA) du MPO pour obtenir des avis sur l'état du stock en 2014 et des avis de capture pour la pêche 2015. L'évaluation de l'état de la ressource du crabe des neiges du sud du Golfe (zones 12, 19, 12E et 12F) est basé sur des relevés au chalut indépendants de la pêcherie, qui fournissent des indicateurs d'abondance (biomasse commerciale), le potentiel de reproduction (abondance des femelles matures) et le recrutement. Les participants à l'examen scientifique inclus le personnel scientifique du MPO de la Région du Golfe, du personnel de la GPA des régions du Golfe et du Québec, des universités, des communautés autochtones, de l'industrie de la pêche, des gouvernements provinciaux et des experts externes invités. Un examen de l'état du stock et les avis sur les captures pour 2015 et 2016 sont présentés dans un rapport d'avis scientifique. Quatre documents de recherche sont attendus à l'appui du rapport d'avis.

1 INTRODUCTION

A regional science advisory process peer review meeting of the fishery and status of the stock for 2014 and advice for the 2015 snow crab (*Chionoecetes opilio*) fishery of the southern Gulf of St. Lawrence biological unit was conducted in Moncton (NB), January 27 and 28, 2015.

The terms of reference (TOR) for the science review were developed jointly by DFO Fisheries and Aquaculture Management and DFO Science Branch, Gulf Region (Appendix 1).

The meeting began at 9:30 AM, Tuesday January 27, 2015. The chair (Marc Lanteigne from DFO Science, Moncton, NB) reviewed the meeting room arrangements and indicated that simultaneous translation, provided by interpreters contracted through Public Works and Government Services Canada, was available to participants.

The chair reviewed the rules of exchange for the meeting, reminding participants that the meeting was a science review and not a consultation. As well, everyone at the meeting had equal standing as participants as there was no observer status at the meeting. Table microphones were provided to ensure good communication during the meeting, to allow for simultaneous translation of the presentations and discussions and as such, exchanges would have to take place one at a time and, if required, through order of the chair. Finally, the objective was to achieve consensus on the appropriateness of the assessment documents and that for the purposes of the science review, consensus was taken as an absence of opposition.

The chair then invited the participants to introduce themselves; the list of participants is provided in Appendix 2.

The chair reviewed the terms of reference for the meeting. The draft agenda was reviewed and accepted (Appendix 3).

Four working papers (WP) for review by meeting participants were made available to confirmed participants and to all industry and aboriginal organizations prior to the science review. These working papers were:

WP 1: Review of the 2014 snow crab (*Chionoecetes opilio*) fishery in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F) by M. Hébert, E. Wade, P. DeGrâce, and M. Moriyasu.

WP 2: Summary of the 2014 multispecies trawl survey activities in the southern Gulf of St. Lawrence by M. Moriyasu, E. Wade, J.F. Landry, P. DeGrâce, T. Surette and M. Hébert.

WP 3: The 2014 assessment of the snow crab (*Chionoecetes opilio*) stock in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F) by M. Hébert, E. Wade, P. DeGrâce, and M. Moriyasu.

WP4: Update on trends in the biomass, distribution, size composition and model-based estimates of commercial abundance of snow crab (*Chionoecetes opilio*) using data from the September multi-species bottom trawl survey of the southern Gulf of St. Lawrence, 1980-2014 by H.P. Benoît, N. Cadigan and S. Wang.

Rapporteur duties were assigned to Venitia Joseph, DFO Science Branch.

2 PRESENTATIONS OF WORKING PAPERS

2.1 REVIEW OF THE 2014 SNOW CRAB (CHIONOECETES OPILIO) FISHERY IN THE SOUTHERN GULF OF ST. LAWRENCE (AREAS 12, 19, 12E AND 12F)

The information was presented by Marcel Hébert (DFO Science, Moncton, NB).

The review of the 2014 snow crab (*Chionoecetes opilio*) fishery in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F) was presented. Total landings in the sGSL in 2014 were 24,439 t out of a quota of 24,230 t. In Area 12, landings were 19,633 t (quota of 19,409 t). The mean catch-per-unit-of-effort (CPUE) from logbooks decreased in 2014 (61.8 kg per trap hauled (kg/th)) compared to 2013 (76.4 kg/th). The mean size of commercial-sized adult males increased in 2014 at 113.2 mm of carapace width (CW) compared to 2013 (111.3 mm). The incidence of soft-shelled crab remained low at 4.4%. In Area 19, landings reached 3,745 t (quota of 3,745 t). The mean CPUE remained high at 147.4 kg/th, comparable to 2013 (148.5 kg/th). The mean size of commercial-sized crabs remained high in 2014 (116.8 mm CW). The incidence of white crabs decreased from 3.0% in 2013 to 1.0% in 2014. In Areas 12E and 12F, landings were 178 t (quota of 170 t) and 882 t (quota of 906 t), respectively. In Area 12E, the mean CPUE increased in 2014 (47.3 kg/th) compared to 2013 (40.1 kg/th). The incidence of soft-shelled crab decreased from 15.9% in 2013 to 7.8% in 2014. In Area 12F, the mean CPUE decreased from 49.0 kg/th in 2013 to 38.1 kg/th in 2014 while the incidence of soft-shelled crabs remained low at 1.7% in 2014.

2.2 SUMMARY OF THE 2014 MULTI-SPECIES TRAWL SURVEY ACTIVITIES IN THE SOUTHERN GULF OF ST. LAWRENCE

The information was presented by Mikio Moriyasu (DFO Science, Moncton, NB).

The details of the 2014 multi-species bottom trawl survey (snow crab survey) of the southern Gulf of St. Lawrence were presented. The primary objective of the survey is to provide the data on abundance and distribution of snow crab and other by-catch species. The survey was conducted from July 9 to October 12 using a chartered commercial fishing vessel. A total of 409 stations were trawled and 353 stations were successfully completed. This year, new depth/temperature probes (Star Oddie) were added to the net for obtaining more accurate net touch down information for the 2015 survey and beyond. In addition, a series of modifications to the existing net sensors' default settings was done. The range of measurement of the net spread, the depth and height sensors was modified from 150 m to 30 m, 2000 m to 500 m, and 0m to 1.5 m (minimum value), respectively in an attempt to diminish the information reception noise and increase the accuracy of swept surface estimations. Details on the survey protocols, timing of the survey, the characteristics of the individual trawl tow, and summary of snow crab and by-catch species were provided.

Discussion

There was some debate by industry over the usefulness of identifying other species (i.e by-catch) in the snow crab trawl survey. The industry was concerned about the use of snow crab funds intended for snow crab surveys being used to fund research for other species. It was clarified that other species data was not being analyzed and no funds are diverted from snow crab research. Data on other species are being collected because there could be some relationships with other benthic species. It was argued that snow crab was not the only species for ecosystem change, which makes it important to collect information on other benthic species that could indicate trends found in snow crab abundance.

There was a question on why the same stations were maintained every year rather than randomly being selected yearly. It was explained that the main reason for this was to obtain 355 stations as quickly as possible. It was decided at the last advisory meeting to keep the same successful stations.

It was suggested by the industry science representative to install additional tilt sensors on the footrope (i.e. side of net) of trawl rather than only at the middle to give a more accurate estimate of area swept.

2.3 THE 2014 ASSESSMENT OF THE SNOW CRAB (CHIONOECETES OPILIO) STOCK IN THE SOUTHERN GULF OF ST. LAWRENCE (AREAS 12, 19, 12E AND 12F)

The information was presented by Marcel Hébert (DFO Science, Moncton NB).

The 2014 assessment of the southern Gulf of St. Lawrence (sGSL) snow crab, *Chionoecetes opilio*, stock (Areas 12, 19, 12E and 12F) is presented for snow crab fishing Areas 12, 19, 12E and 12F. Snow crab in fishing areas 12, 19, 12E, and 12F comprise a single biological population and the southern Gulf of St. Lawrence stock is considered as one unit for assessment purposes. The 2014 assessment was conducted as per the recommendations of the Snow Crab Assessment Methods Framework Science Review held in November 2011. The exploitation rate of the 2014 fishery in the sGSL was 37.1%. The 2014 post-fishery survey biomass of commercial-sized adult male crabs was estimated at 67,354 t (95% confidence intervals 60,994 to 74,579 t), an increase of 2.5% from 2013. The available biomass for the 2015 fishery, derived from the 2014 survey, is within the healthy zone of the Precautionary Approach Framework. The residual biomass (23,897 t) from the 2014 survey decreased by 11.1% compared to 2013. Sixty-five percent (65%) of the 2014 survey biomass, available for the 2015 fishery, is composed of new recruitment (43,630 t). The recruitment to the commercial biomass from the 2014 survey increased by 11.9% relative to the previous year. The predicted recruitment of commercial-sized adult male crab for the 2016 fishery was estimated at 42,300 t (32,760 to 51,840 t). Risk analysis of catch options for the 2015 fishery is provided.

Discussion

There was some discussion around the methodology used to obtain DFO biomass estimates because the calculations made by members of the industry are higher than DFO biomass estimates. It was noted the DFO biomass estimates are verified through an independent analysis of the 2014 survey data by Dr. Nicolas Bez (Geo fish, Saint-Jean de Védas, France) using the same methodology but with a different software. This independent analysis showed DFO biomass estimates were not significantly different.The independent review of snow crab data and kriging methods has been done for the last 3 years. A question arose as to whether raw data was used in the independent analysis and it was noted this was not the case as swept surfaces are already calculated by stations when provided to Dr. Bez. The industry scientist notes that the swept surfaces are most important since if there is any variation then it affects the calculation of snow crab biomass. It was also argued that the debate around the precision of the swept area ignores the fact that the largest uncertainty is associated with the variability in abundance between stations rather than the variation that would be associated with uncertainty around the swept area estimates. The net mensuration electronic equipment used on the snow crab trawl are extensive and comparison of net touch down times using the new tilt sensors compared to the data logger depth profiles indicates a very small and unbiased difference in touch down times. Work to improve the estimates of swept area for the trawl survey is ongoing. Any changes in methodology, like a different approach to calculate swept area, would have to be reviewed in a Framework Peer Review process, as conducted in 2011. The mandate of the present science peer review process is not to review elements of the methodology.

2.4 UPDATE ON TRENDS IN THE BIOMASS, DISTRIBUTION, SIZE COMPOSITION AND MODEL-BASED ESTIMATES OF COMMERCIAL ABUNDANCE OF SNOW CRAB (CHIONOECETES OPILIO) USING DATA FROM THE SEPTEMBER MULTI-SPECIES BOTTOM TRAWL SURVEY OF THE SOUTHERN GULF OF ST. LAWRENCE, 1980-2014

The information was presented by Hugues Benoît (DFO Science, Moncton, NB).

The research vessel bottom-trawl survey of the southern Gulf of St. Lawrence undertaken each September (RV survey) has been shown to provide reliable standardized indices of biomass, spatial distribution and habitat use of commercial-sized male snow crab (*Chionoecetes opilio*) for 2001 to present and of all snow crab (aggregated index) for 1980 to present. Furthermore, results from that survey have successfully been combined with data from a dedicated snow crab survey as part of model-based estimation of the abundance of commercial males snow crab. This document provides an update for biomass indices, spatial distribution and size composition based on the results of the 2014 RV survey. Furthermore, the document provides an update of the model-based estimates of commercial crab abundance, as well as a presentation and discussion of a few changes that were made for that estimation since 2014. Of particular note, the RV survey confirmed a continued high biomass of commercial-sized adult male snow crab since 2011 which were also observed in the dedicated snow crab survey. Model-based estimates of commercial crab abundance were above the long-term average in 2013 and 2014. The 2014 RV survey captured an unusually high number of small crabs (≤15 mm) in several areas of the southern Gulf of St. Lawrence. This is part of a general increase in small crab abundance since the early 2000s.

Discussion

There was a question as to why there would be a difference in catchability between boats. It was noted the exact reason is unknown but differences among vessels could arise from how fast the trawl hits the bottom, how the net and doors respond during the tow based on the inertia of the towing vessel (weight, horsepower). Variations in catchability among vessels are common and generally accepted consideration. This analysis was done to determine the catchability before 1997 when a different boat was used for the RV survey and to investigate the possibility of addressing the data gaps in the snow crab survey coverage from 1988 to 1996. Snow crab survey data for 1988-1996 are presently not used in the stock assessment with respect to the target sGSL snow crab assessment area.

Some questions arose from the industry on the design of strata of the RV survey because of changes in concentrations from one year to the next of snow crab. It was explained that the survey was designed in 1971 and has not changed exceptt for some species that were added. The RV survey is optimized for groundfish species but works for other benthic species like snow crab as well. The precision may be affected since the survey is not specifically designed for snow crab, however this factor is taken into consideration by integrating with the dedicated snow crab survey data. There was a question as to why catchability of the vessel would increase in the second year and the differences between vessels tend to be small.

There was discussion around the question of if you were to generate a biomass using just the RV survey, how would this biomass estimate be different without including 2014 snow crab survey data. It was explained that it is possible to do this calculation, but most of the information was coming from the snow crab survey. The RV survey has a 19mm liner that catches small crabs whereas the snow crab survey has a 40mm liner which slips out the small crabs.

2.5 THE 2014 ASSESSMENT OF THE SNOW CRAB (CHIONOECETES OPILIO) STOCK IN THE SOUTHERN GULF OF ST. LAWRENCE (AREAS 12, 19, 12E AND 12F): RISK ANALYSIS AND CATCH OPTIONS FOR 2015

The information was presented by Marcel Hébert (DFO Science, Moncton, NB).

Risk analysis of catch options relative to reference points for the 2015 fishery wasprovided. Within the Precautionary Approach framework (DFO 2009), the limit reference point for biomass (B_{lim}) defines the critical / cautious zones and an upper stock reference point (BUSR) delimits the cautious / healthy zones on the stock status axis. A removal rate limit reference point (F_{lim}) defines the maximum removal rate in the healthy zone. A risk analysis was developed for the decision rule TAC and relative to other catch levels in 2015. The risk analysis indicates that the TAC derived from the harvest decision rule will result in a near zero chance of the residual biomass after the fishery being less than B_{lim} and a near 100% chance of the biomass for the next year's fishery being above BUSR and in the healthy zone of the PA. The risk analysis also provides predictions of the commercial biomass in the 2015 survey, assuming the corresponding catch level is taken in 2015. At the decision rule TAC value of 26,036 t for the 2015 fishery, the commercial biomass predicted for the 2015 post-fishery survey and for the 2016 fishery, was 65,680 t, with a 95% confidence interval range of 54,800 to 76,410 t, a value similar to the 2014 survey.

Discussion

There was discussion about crab movement and to find out more information through systematic data collection (i.e. tagging study) to monitor crab movement in all zones. This question was further examined under the section "other points of discussion" (see below).

3 REVISION OF THE SCIENCE ADVISORY REPORT

The draft Science Advisory Report (SAR) of the 2014 fishery characteristics, biomass estimates and risk analysis of catch options for 2015 was reviewed on January 28, 2015.

The SAR has included predictions for two years of fishery since 2013. There was some debate over whether to include fishery predictions for more than one year. After some discussion, there was a consensus to keep the two years (2015 and 2016) projections in the report because good levels of certainty exist around the 2016 prediction and provides transparency for the component of the risk analysis associated with the biomass in the subsequent year relative to the upper stock reference point. Furthermore, DFO Fisheries Management has requested science advice for two years.

4 OTHER POINTS OF DISCUSSION

4.1 SUMMARY OF CPUE OF SNOW CRAB FOR VARIOUS ZONES

A presentation was made by Elmer Wade (DFO Science, Moncton NB) on the progress to date of work associated with analysing the extensive time series of catch per unit effort data from the commercial fishery.

Catch rates for the various fishing zones (12, 19, 12E and 12F) varies from year to year from logbooks and the question of why CPUE is not directly related to biomass was explained. There is a high CPUE early in the season and it decreases as the fishery progress toward the end of the season. Some reasons are early or late start to the fishing season or a short fishing season (3 weeks), mean number of traps, and soak times (traditional vs. non- traditional fishers).

There is a high CPUE in Cape Breton corridor (zone 19 compared to other zones). In this zone, the high CPUE is not related to soak time since even when the data is standardized (to 1 day soak time), the CPUE results still remain high.

Work will continue in the coming year to provide descriptions of the changes in fishing gear, fishing practices, and to define other variables which may influence the relative fishing power of the crab gear in the fishery. There is need to consult with fish harvesters, to determine what factors are important and prepare specific questions that would help interpret the commercial fishery CPUE data.

4.2 REVIEW OF TRAWL EQUIPMENT INTSTALLED IN 2014

The information was presented by Elmer Wade (DFO Science, Moncton, NB).

Three Star Oddi® sensors were installed in 2014 to measure net touchdown in anticipation of finding the best sensor option for replacing the depth/temperature minilog sensor which is being discontinued by the manufacturer. One Star Oddi® pressure sensor (measuring depth) was installed on the headrope in tandem with the minilog pressure sensor. The two other Star Oddi® sensors, a pressure sensor and tilt sensor (to measure tilt angle) were placed in the middle of the footrope in a steel casing to prevent damage. The results showed a difference of 1.8 seconds in the measurement between the Star Oddi® pressure sensor on foot rope and the minilog pressure sensor on the headrope. This is likely because the foot rope hits the floor before the minilog measurement on the headrope. In the headrope, there is no difference in interpretation between the minilog and Star Oddi® pressure sensors. The Star Oddi® tilt sensor on the footrope was determined to the best option to replace the minilog pressure sensor since there was a clear indication of when net touchdown occurred.

Discussion

The industry suggested installing three tilt sensors, one on each of the footropes (wing) and one in the middle, to estimate more precisely the touch down time of the gear and to more accurately estimate the area swept by the trawl. The suggestion will be considered but it was noted attaching and unloading sensors is time consuming for the survey. It is also not clear how multiple tilt data will be used to estimate touchdown time as there is no prior assumption that all parts of the net will hit the bottom at exactly the same time. The important point to understand for any sampling methodology is that the method used be consistent among tows, locations and years and therefore comparable from year to year.

4.3 TAGGING FOR SNOW CRAB MOVEMENT

A tagging study to investigate movement of crab within fishing zones and southern Gulf was suggested earlier in the meeting. Some participants suggested that the high CPUE values in fishing area 19 (Cape Breton) may be due to movements of crab into the area from outside the southern Gulf or even from other areas in the southern Gulf. Fishers are interested in knowing crab movement and would like to better understand the movements of snow crab. The discussion was centered on what question (s) would be answered by the tagging study, type of tagging methods suitable for the study, and when the program could start. It was agreed to proceed with the tagging project but the details of the study would be discussed in a separate meeting.

9 MEETING PRODUCTS AND CLOSURE OF MEETING

A draft of the Science Advisory Report (SAR) was completed at the end of the meeting and published March 2015 (Assessment of snow crab in the southern Gulf of St. Lawrence (Areas 12, 19, 12E and 12F) and advice for the 2015 fishery).

The four working papers presented at the meeting were to be upgraded to research documents in support of the advisory report.

The meeting was scheduled for three days January 27-29, 2015, however all agenda items were covered in two days and the meeting adjourned on January 28, 2015 at 4 pm.

6 APPENDIX

APPENDIX 1: TERMS OF REFERENCE

Assessment of the status of the southern Gulf of St. Lawrence snow crab stock

Regional Peer Review – Gulf Region

January 27-28, 2010
Moncton, New Brunswick

Chairperson: Marc Lanteigne (DFO Gulf Region)

Context

In support of DFO Ecosystems and Fisheries Management request for advice, DFO Science Branch Gulf Region undertakes a peer review of the stock status of the snow crab (*Chionoecetes*/*Chionoecetes opilio*) biological unit of the southern Gulf of St. Lawrence (management areas 12, 12E, 12F and 19).

Objectives

Develop science advice for the management of the snow crab fishery for the southern Gulf of St. Lawrence biological unit for the 2010 fishing season. The following considerations and items will be on the agenda for the peer review meeting:

- Present for each of the four management areas in the southern Gulf (12, 12E, 12F and 19):
  - Commercial fishery statistics for the 2010 fishing season (catches, landings and effort, size sampling).
  - Indicators of fishery performance: catch per unit of effort, size and carapace condition of commercial size crab.
- Present the following estimates based on the post-fishery directed snow crab trawl survey for the extended polygon of 20 to 200 fathoms for 2010 and previous years:
  - The exploitable commercial biomass (adult male crab of carapace width >= 95 mm) for the southern Gulf biological unit and for each of the four management areas (12, 12E, 12F and 19) within the southern Gulf biological unit.
  - The abundance of male crab recruitment for the near future.
  - The present and future abundance of the spawning stock.
  - The size structure of the male and female crab by stage of maturity.
  - The realized exploitation rates and size rates of the commercially exploitable biomass.
- Present analyses of indicators of snow crab abundance and distribution based on the September multi-species research vessel survey of the southern Gulf of St. Lawrence.
- Perform a risk analysis of catch options for the 2010 fishery year, including projections with uncertainty of the predicted adult male commercial biomass components (residual biomass, recruitment biomass) for the 2010 fishery year. The risk analyses will be prepared for the southern Gulf biological unit, relative to the reference points (limit, upper reference), and according to the agreed decision rule developed for this biological unit and fishery.
- Present the information on the environmental factors which may influence the abundance and population dynamic of the snow crab stock of the southern Gulf of St. Lawrence.

Expected publications

- CSAS Science Advisory Report on status and fisheries advice of the snow crab biological unit of the southern Gulf of St. Lawrence (management units 12, 12E, 12F and 19)
- CSAS Proceedings
- CSAS Research Documents

Participation

- DFO Science Branch
- Other DFO Sectors
- Provinces
- External experts (to DFO)
- Fishing industry
- Aboriginal peoples

APPENDIX 2: LIST OF PARTICIPANTS TO THE SCIENCE PEER REVIEW MEETING OF SNOW CRAB FROM THE SOUTHERN GULF OF ST. LAWRENCE, JANUARY 27 AND 28, 2015.

Name	Affiliation	27 Jan	28 Jan
Albert, Gilles	Association des pêcheurs de la MRC de Pabok	X	X
Aylward, Joey	PEI Snow Crab Fisherman Association	X	X
Benoit, Hugues	DFO Science Gulf Region	X	-
Boudreau, Paul	Regroupement des pêcheurs professionnels des Iles-de-la-Madeleine	X	X
Bréthes, Jean-Claude	Université du Québec à Rimouski	X	X
Campbell, Tommy	Area 19 Snow Crab Fishermen's Association	X	X
Chaput, Gérald	DFO Science Gulf Region	X	X
Chassé, Joel	DFO Science Gulf Region	X	X
Conan, Gerard	Conseiller scientifique, Association de crabier Québec et du Golfe	X	X
Cormier, Rita	DFO Science Gulf Region	X	X
DeGrâce, Pierre	DFO Science Gulf Region	X	X
Desbois, Daniel	Association des Crabiers Gaspésiens (ACG)	X	X
Diotte, Marc	Association des morutiers traditionnels de la Gaspésie	X	X
Fraser, Doug	PEI Fishermen's Association	X	X
Gaudet, Mario	NB Department of Agriculture, Aquaculture and Fisheries	X	-
Gionet, Joel	Association des crabiers acadiens (ACA)	X	X
Haché, Robert	Association des crabiers acadiens (ACA)	X	X
Hébert, Marcel	DFO Science Gulf Region	X	X
Joseph, Venitia	DFO Science Gulf Region	X	X

Name	Affiliation	27 Jan	28 Jan
Landry, Jean-François	DFO Science Gulf Region	X	X
Lanteigne, Jean	Fédération régionale acadienne des pêcheurs professionnels (FRAPP), Shippagan (NB)	X	X
Lanteigne, Marc	DFO Science Gulf Region	X	X
Léger, Sylvie	DFO Resource Management Gulf Region	-	X
MacLean, Basil	Area 19 Snow Crab Fishermen's Association	X	X
Mallet, Victorin	Atlantic Policy Congress of First Nations Chiefs Secretariat	-	X
Moriyasu, Mikio	DFO Science Gulf Region	X	X
Noel, Hubert	Crabiers du Nord-Est (CNE)	X	X
Noël, Martin	Association des pêcheurs professionnels crabiers acadiens Inc.	X	X
Quinn, Frank	DFO Resource Management Gulf Region	X	-
Parisé, Francis	Association des crabiers de la Baie (ACB)	X	X
Petitpas, Blair	Groupe de pêcheurs zone 12F Inc.	X	X
Richard, Michel	Maritime Fishermen's Union	X	X
Sandt-Duguay, Emmanuel	Association de gestion halieutique autochtone Mi'kmaq et Malécite (AGHAMM)	X	X
Surette, Tobie	DFO Science Gulf Region	X	-
Sylvestre, Renaud	La Nation Micmac de Gespeg	X	X
Wade, Elmer	DFO Science Gulf Region	X	X

APPENDIX 3: AGENDA OF THE MEETING.

Agenda	Time
Tuesday January 27-	
Meeting room open	9 00 – 9 30
Introduction, review of agenda	9 30 – 9 45
Description of the 2014 snow crab fishery in the southern Gulf of St. Lawrence (Hebert et al. Fishery En.pdf).	9 45 – 10 30
Break	10 30 – 10 40
Report of the 2014 trawl survey for snow crab in the southern Gulf of St. Lawrence (Moriyasu et al Survey activities En.pdf). The 2014 assessment of the snow crab stock (southern Gulf, areas 12, 19, 12E and 12F) (Hebert et al. Assessment En.pdf).	10 45 – 12 00
Lunch	12 00 – 13 00
The 2014 assessment of the snow crab stock (southern Gulf, areas 12, 19, 12E and 12F) (Hebert et al. Assessment En.pdf) (continued). September multi-species survey index (WP_snow crab RV survey update.pdf). Environmental conditions Risk analysis and catch options for 2015 (Hebert et al. Assessment En.pdf)	13 00 – 17 00
Break	15 00 – 15 15
Wednesday January 28	
Meeting room open	8 00 – 8 30
Follow-up on outstanding issues from the first day (if required) • Stock assessment for snow crab • Indices and models • Risk analysis Editing of draft advisory report on status of snow crab from the southern Gulf (all participants).	8 30 – 12 00
Break	10 00 – 10 15
Lunch	12 00 – 13 00
Editing of draft advisory report on status of snow crab from the southern Gulf (all participants). Update on work associated with the following topics : - documenting changes in fishing methods to study the catch per unit effort time series - review of the new trawl mensuration equipment used in 2014 to measure trawl performance	13 00 – 17 00
Thursday January 29	
Meeting room open	8 00 – 8 30
Update on work associated with the following topics : - documenting changes in fishing methods to study the catch per unit effort time series - review of the new trawl mensuration equipment used in 2014 to measure trawl performance	8 :30 – 12 :30
Break	10 00 – 10 15
End of meeting	13 :00